MANUFACTURER DATA SHEET

Power Supply

Manufacturer:

Allen-Bradley/Rockwell

Model Number:

1746-P1

See www.geomartin.com for additional PDF datasheets

Martin Part Number:	VendorPartNumber:
E-014624-01	AB # 1746-P1, Power Supply

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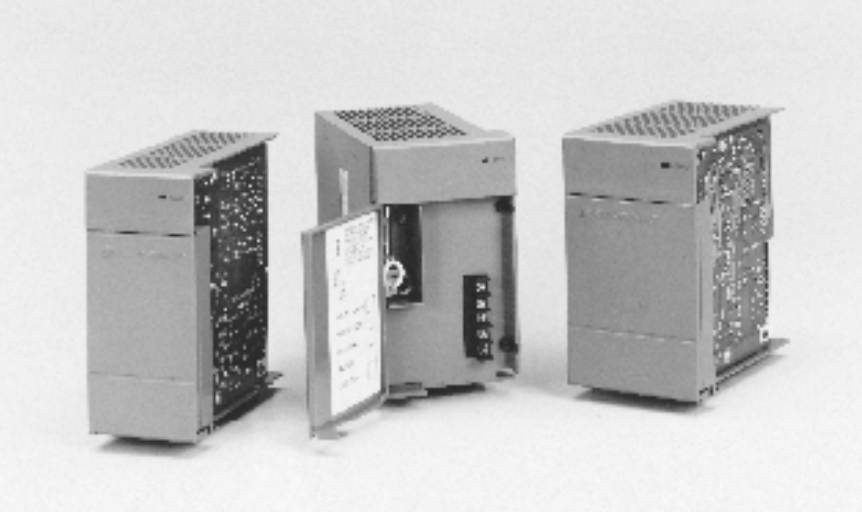
Rockwell Automation

SLC 500™ Power Supplies

(Catalog Numbers 1746-P1, 1746-P2, 1746-P3, 1746-P4, 1746-P5, 1746-P6, and 1746-P7)

Installation Instructions



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Publication 1746-IN004A-ML-P

Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of this control equipment must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards.

The illustrations, charts, sample programs and layout examples shown in this guide are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Allen-Bradley does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, *Safety Guidelines for the Application, Installation, and Maintenance of Solid-State Control* (available from your local Allen-Bradley office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

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Throughout these installation instructions we use notes to make you aware of safety considerations:

ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage or economic loss.

Attention statements help you to:

- identify a hazard
- avoid the hazard
- recognize the consequences

Important: Identifies information that is critical for successful application and understanding of the product.

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English Section

SLC 500™ Power Supplies

(Catalog Numbers 1746-P1, 1746-P2, 1746-P3, 1746-P4, 1746-P5, 1746-P6, and 1746-P7)

Overview

Install your power supply using these installation instructions. The only tools you require are Flat head (1/8”) and Phillips head (1/4”, #2) screwdrivers.

ATTENTION: Electrostatic discharge can damage integrated circuits or semiconductors if you touch backplane connector pins. Follow these guidelines when you handle the power supplies.

- Touch a grounded object to discharge static potential.
- Do not touch the backplane connector or connector pins.
- Do not touch circuit components inside the power supply.
- If available, use a static-safe work station.
- When not in use, keep the power supplies in their static-shield packaging.

Hazardous Location Considerations

This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D or non-hazardous locations only. The following WARNING statement applies to use in hazardous locations.

WARNING: EXPLOSION HAZARD

- Substitution of components may impair suitability for Class I, Division 2.
- Do not replace components or disconnect equipment unless power has been switched off or the area is known to be non-hazardous.
- Do not connect or disconnect components unless power has been switched off or the area is known to be non-hazardous.
- All wiring must comply with N.E.C. article 501-4(b).

Environnements Dangereux

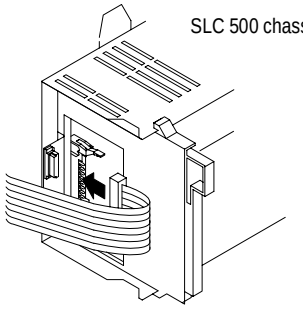
Cet équipement est conçu pour être utilisé dans des environnements de Classe I, Division 2, Groupes A, B, C, D ou non dangereux. La mise en garde suivante s’applique à une utilisation dans des environnements dangereux.

AVERTISSEMENT: DANGER D’EXPLOSION

- La substitution de composants peut rendre cet équipement impropre à une utilisation en environnement de Classe I, Division 2.
- Ne pas remplacer de composants ou déconnecter l'équipement sans s'être assuré que l'alimentation est coupée.
- Ne pas connecter ou déconnecter des composants sans s'être assuré que l'alimentation est coupée.

Install the Chassis Interconnect Cable (Optional)

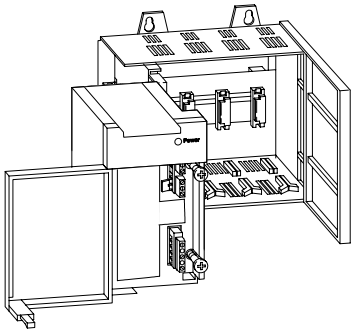
To connect up to three SLC 500™ chassis together, install the chassis interconnect cable before installing the power supply



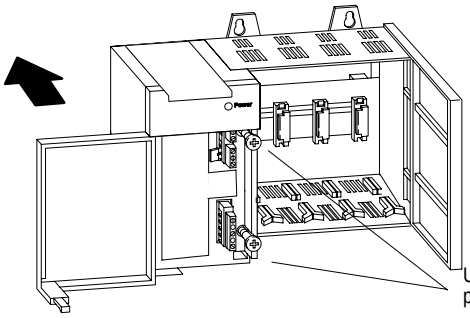
For more information, see the *SLC 500 Modular Style Installation and Operation Manual* (publication 1747-6.2).

Power Supply Installation

1. Align the circuit board of the power supply with the card guides on the left side of the chassis



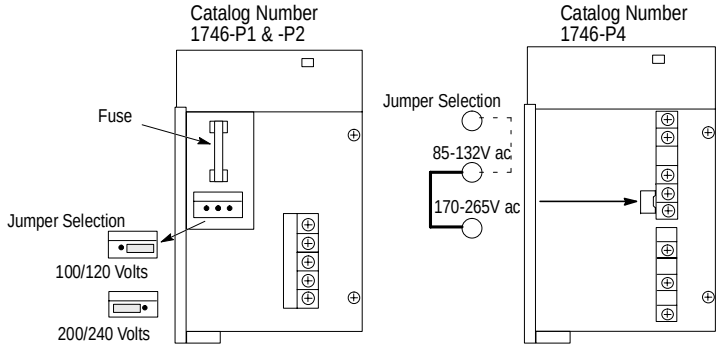
2. Slide the power supply in until it is flush with the chassis. Then fasten the power supply to the chassis



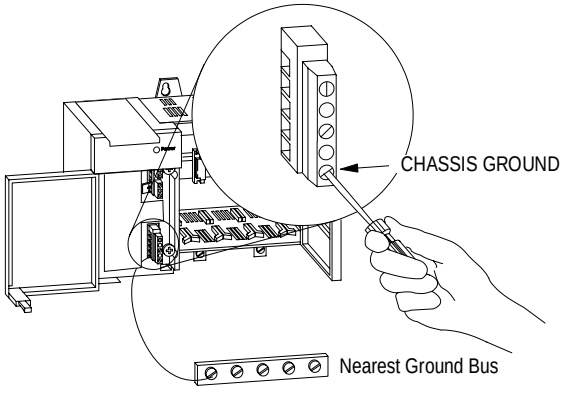
Power Supply Wiring

1. Place the input voltage jumper to match the input voltage. (This does not apply to the 1746-P3, -P5, -P6, and -P7 power supplies, which do not have a jumper.)

ATTENTION: Set the input jumper before applying power. Hazardous voltage is present on exposed pins when power is applied; contact with the pin may cause injury to personnel.

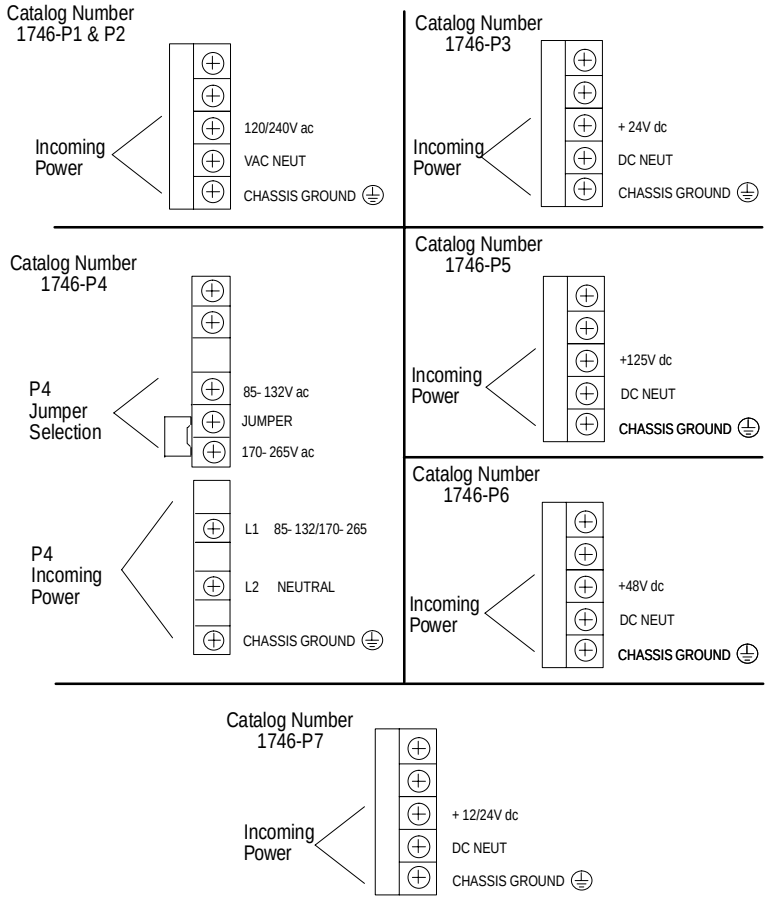


2. Connect the ground screw of the power supply to the nearest ground or ground bus. Use a #14 AWG wire and keep the leads as short as possible. The 1746-P4 is shown below. *Refer to page 6 for special wiring considerations for the 1746-P3.*



3. Connect incoming power.

ATTENTION: Turn off incoming power before connecting wires; failure to do so could cause injury to personnel and/or equipment.

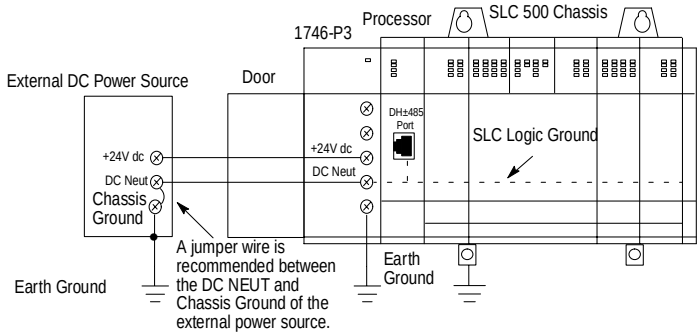


ATTENTION: Your SLC 500 power supply can be damaged by voltage surges when switching inductive loads such as motors, motor starters, solenoids, and relays. To avoid damage to your SLC 500 power supply in these applications, it is strongly reccommended than an isolation transformer be used to isolate the power supply from harmful voltage surges.

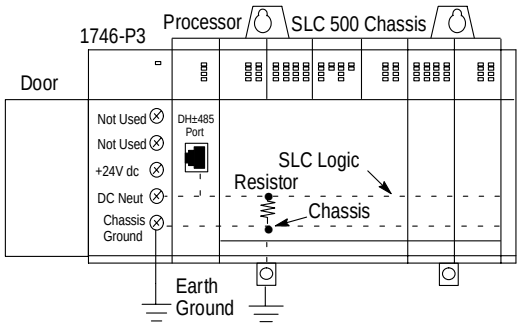
1746-P3 Wiring Considerations

The information below describes special wiring considerations for the 1746-P3.

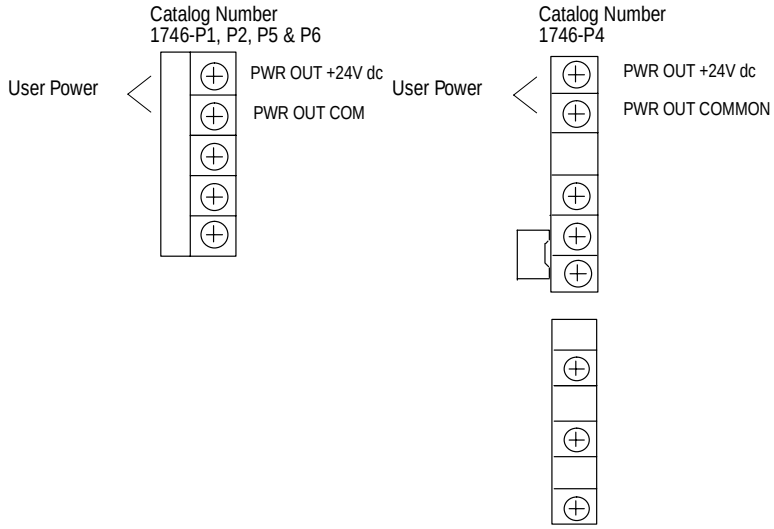
ATTENTION: Any voltage applied to the 1746-P3 DC NEUT terminal will be present at the SLC logic ground and the processor DH-485 port. To prevent unwanted potentials across the logic ground of the controller and/or damage to the SLC chassis, the DC NEUTRAL of the external DC power source must be either isolated from the SLC chassis ground or connected to earth ground as shown in the following illustration.



Important: SLC 500 Series A chassis (1746-A4, -A7, -A10, and -A13) manufactured *before* November 1992 have a resistor between the logic ground and chassis ground as the drawing on the following page illustrates. This resistor could be damaged if the wiring recommendation described within the attention box above is not followed. See the figure on the following page for the location of the resistor. SLC 500 Series A chassis (1746-A4, -A7, -A10, and -A13) with a manufacture date of November 1992 or later do not have this resistor. SLC 500 Series B chassis have a 1MΩ resistor that limits the current between logic ground and chassis ground.



4. **(Optional)** For the 1746-P1, -P2,-P4, -P5 and -P6 power supplies, use PWR OUT +24V dc and PWR OUT COM terminals to power 24V dc sensors and loads. The terminals on the 1746-P1, 1746-P2, 1746-P5 and 1746-P6 provide an isolated, nonfused 200 mA, 24V dc power supply. The terminals on the 1746-P4 provide an isolated, nonfused 1A, 24V dc power supply. (The 1746-P3 and -P7 power supplies do not provide for an external power source.)

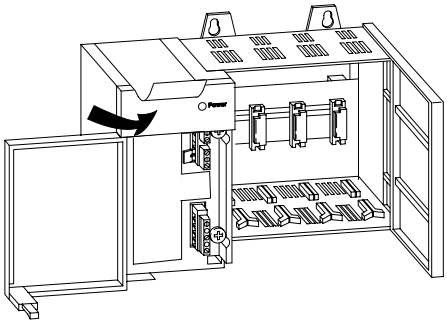


SLC 500 Operation with 24V dc User Power Overcurrent Condition

Catalog No.	SLC Operation	Recovery Procedure
1746-P1 Series A (made in Japan)	P/S shutdown, CPU Fault	Reload user program
1746-P1 Series A (made in Malaysia-current production)	24V dc user shutdown, CPU continues	Correct overcurrent condition
1746-P2 Series A, B	P/S shutdown, CPU Fault	Reload user program
1746-P2 Series C	24V dc user shutdown, CPU continues	Correct overcurrent condition
1746-P4 Series A	P/S shutdown, CPU Fault	Reload user program
1746-P5 Series A	24V dc user shutdown, CPU continues	Correct overcurrent condition
1746-P6 Series A	24V dc user shutdown, CPU continues	Correct overcurrent condition

ATTENTION: For 1746-P1 (made in Malaysia), 1746-P2 Series C, 1746-P5 Series A, and 1746-P6 Series A to aviod unexpected operation due to 24V dc user power shutdown, monitor the 24V dc user output with a 24V dc input channel.

5. Remove the protective label.



Power Supply Undervoltage Operation

SLC 500 controllers continue to operate (hold-up) for a short period of time if the input voltage to the power supply drops below the recommended operating voltage range. The controller continues to scan the user program and control I/O during this time. CPU hold-up for each power supply is shown on pages 9 and 10.

SLC 500 controllers turn OFF (stop scanning and disable outputs) if input voltage to the power supply is removed or drops below the recommended operating range for a period exceeding the CPU hold-up time. The controller resumes operation automatically when the input voltage is restored to normal.

If the input voltage to the 1746-P7 power supply falls into a range of 4 to 9V for a period exceeding the CPU hold-up time, the controller turns OFF and will not turn back ON until:

- input voltage is increased to 11V dc.

General Specifications (Power Supplies P1, P2, P3, and P4)

See page 10 for general specifications on the P5, P6, and P7 power supplies.

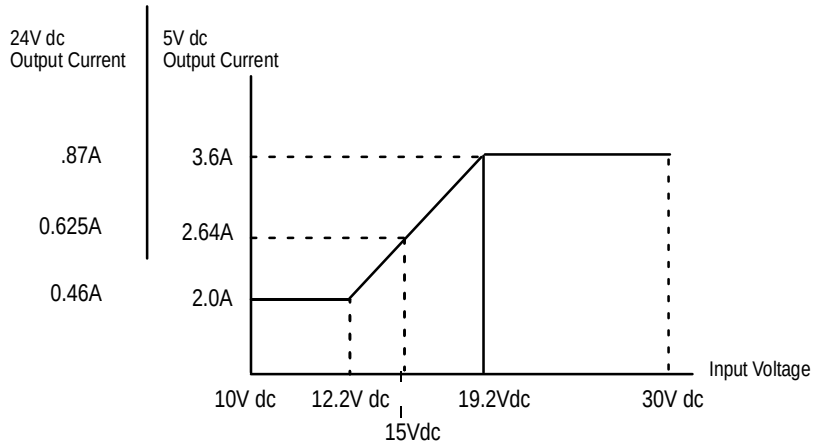
Description:	Specification: 1746-			
	P1	P2	P3	P4
Line Voltage	85-132/170-265V ac 47-63 Hz		19.2-28.8V dc	85-132/170-265V ac 47-63 Hz
Typical Line Power Reqmnt.	135 VA	180 VA	90 VA	240 VA
Maximum Inrush Current	20A			45A
Internal Current Capacity	2A at 5V dc 0.46A at 24V dc	5A at 5V dc 0.96A at 24V dc	3.6A at 5V dc 0.87A at 24V dc	10.0A at 5V dc 2.88A at 24V dc[1]
Fuse Protection[2]	1746-F1 or equivalent[3]	1746-F2 or equivalent[4]	1746-F3 or equivalent[5]	Fuse is soldered in place.
24V dc User Power Current Capacity	200 mA		Not Applicable	1A[1]
24V dc User Power Volt. Range	18-30V dc			20.4-27.6V dc
Ambient Operating Temperature	0°C to +60°C (+32°F to +140°F) Current capacity is derated 5% above +55°C.			0°C to +60°C (+32°F to +140°F) no derating
Isolation[6]	1800V ac RMS for 1 s		None[7]	2600V dc for 1 s
CPU Hold-up Time[8]	20 ms (full load) 3000 ms (no load)		5 ms (full load) 1000 ms (no load)	20 ms (full load) 3000 ms (no load)
Certification	UL listed C-UL or CSA certified (as indicated by product or packaging markings) CE compliant for all applicable directives			
Hazardous Environment Cert.	Class I Division 2			

1. The combination of all output power (5 volt backplane, 24 volt backplane, and 24 volt user source) cannot exceed 70 watts.
2. Power supply fuse is intended to guard against fire hazard due to short-circuit conditions. This fuse may not protect the supply from miswiring or excessive transient in the power line.
3. Equivalent fuses: 250V-3A fuse, nagasawa ULCS-61ML-3, or BUSSMAN AGC 3
4. Equivalent fuse: 250V-3A fuse, SANO SOC SD4, or BUSSMAN AGC 3
5. Equivalent fuse : 125V-3A fuse, Nagasawa ULCS-61ML-5, or BUSSMAN AGC 5
6. Isolation is between input terminals and backplane.
7. No isolation between input terminals and backplane. However, dielectric withstand between input terminals and chassis ground terminal is 600V ac RMS for 1 s.
8. CPU hold-up time is for 0V unless specified. Hold-up time is dependent on power supply loading.

General Specifications (continued)

Description:	Specification: 1746-			
	P5	P6	P7	
Line Voltage	90-146V dc	30-60V dc	10-30V dc[1]	
Typical Line Power Requirement	85 VA	100 VA	12V dc input: 50 VA	24V dc input: 75 VA
Maximum Inrush Current	20A		20A (required for turn-on)	
Internal Current Capacity	5A at 5V dc 0.96A at 24V dc		12V dc input: 2.0A at 5V dc 0.46A at 24V dc	24V dc input: 3.6A at 5V dc 0.87A at 24V dc
			See P7 current capacity chart on page 11.	
Fuse Protection[2]	Fuse is soldered in place.			
24V dc User Power Current Capacity	200 mA		Not Applicable	
24V dc User Power Voltage Range	18-30V dc			
Ambient Operating Temp.	0°C to +60°C (+32°F to +140°F) Current capacity is derated 5% above +55°C.			
Isolation[3]	1800V ac RMS for 1 s		600V ac RMS for 1 s	
CPU Hold-up Time[4]	20 ms (full load) 3000 ms (no load)	5 ms (full load) 1500 ms (no load)	12V dc input: 1.37 ms at 0V dc (full load) 895 ms at 0V dc (no load) 10 ms at 9V dc (full load) continuous at 9V dc (no load)	24V dc input: 40 ms at 0V dc (full load) 1860 ms at 0V dc (no load) 790 ms at 11V dc (full load) continuous at 11V dc (no load)
Certification	UL listed C-UL or CSA certified (as indicated by product or packaging markings) CE compliant for all applicable directives			
Hazardous Environment Certification	Class I Division 2			

1. See page 11. for information on power supply under voltage operation.
2. Power supply fuse is intended to guard against fire hazard due to short-circuit conditions. This fuse may not protect the supply from miswiring or excessive transient in the power line.
3. Isolation is between input terminals and backplane.
4. CPU hold-up time is for 0V unless specified. Hold-up time is dependent on power supply loading.



Physical Dimensions

Controller: 1746-	Length: mm (in.)	Depth: mm (in.)	Height: mm (in.)
P1	65 (2.56)	140 (5.70)	140 (5.51)
P2	85 (3.35)		
P3			
P4	110 (4.33)	145 (5.70)	
P5	85 (3.35)	140 (5.70)	
P6			
P7			

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